COMMERCIAL AND ECONOMIC ASPECTS OF SPACE FLIGHT

by

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The challenge of the Space Frontier has proven so great that even the earliest operations are forcing new technology in practically every one of the wide range of scientific and technical disciplines involved. Many years may pass before some of these new techniques are generally applied to other than the exploration of space. On the other hand there are many developments which can be applied directly to everyday commercial and economic progress.

The space exploration problems define stringent requirements for equipment which can operate reliably for long periods of time and at the same time be light and compact enough for incorporation into the critically loaded space flight systems. Advanced equipment that is reliable, compact, and lightweight can also make practical whole classes of commercial devices for medical, household and transportation applications.

For example, the need for medical monitoring of the astronauts requires that physiological data be supplied to doctors on the ground. Equipment capable of performing this difficult function can very quickly find application in everyday medicine. For instance, cardiac signals may be detected and transmitted by

devices so small as to be unnoticeable by the patients and computers can be used to aid in the analysis and configuration of the measured data. The doctor can thus be provided with a whole new class of tools to aid in his battle for better health.

The remotely-controlled exploration devices for study and sampling of the lunar and planetary surfaces may well prove to be the prototypes for a wide variety of new household aids capable of performing tasks ranging from care of the lawn and snow removal to general house cleaning.

In the field of transportation, the composite gains in material technology and equipment capability coupled with new design approaches might aid in providing the long sought private flying machine. Such a machine must be capable of safe flight and emergency descent without damage over populated areas. It must be capable of reliable all-weather flight over a system of electronic highways in the sky. Central and automatic control as well as direct control will be needed for safe high density traffic handling. Technology under way opens the potential for dialing a destination in a manner similar to telephone dialing. A system of clear electronic highways might then be sequentially acquired by automatic equipment, thus allowing the vehicle to be safely directed to a destination in spite of heavy local traffic.

Finally, and far from least important and difficult, the nuisance factors must be controlled. Noise levels must be reduced to values compatible with residential area operations. Air velocities and temperatures must be attenuated. Unburned hydrocarbons and other atmospheric contaminants must be controlled to prevent smog.

In short, the vehicle must be configured in a manner that the safety and comfort of the public is given the same consideration as the safety and comfort of the user.

Such a vehicle may appear at first consideration to be completely impractical of achievement. On the other hand, the rapid piling up of technological achievements stimulated by our active space exploration program might be an important aid to a directed attack on this problem. If successful, such a program might be capable of giving our economy a multi-million-dollar shot in the arm. It could provide understandable evidence to the world of the vitality of the United States technological leadership, and it could provide a foundation for a new economic revolution of similar proportions to that which developed around the automobile.